Soils

RESOURCE BRIEF

Importance

Development of soils, vegetation, and hydrology are closely related. These components influence the cultural landscape of the Sand Creek Massacre National Historic Site (NHS). Soils in Sand Creek Massacre NHS support the shortgrass prairie ecosystem and a variety of vegetation and habitats, including mixed grass prairie and wetlands. The diversity of upland grassland and riparian areas provide a unique and important habitat for birds, especially migrating and sensitive species. The surface features, including soils, and hydrologic conditions of the Big Sandy Creek watershed limit the magnitude of floods that may be caused by extreme rain events. The high infiltration rates of the surrounding sandy, porous soil reduce the amount of water flow that reaches the stream channel.

Status and Trends in Sand Creek

Soils in Sand Creek Massacre NHS consist primarily of sandy loams which are extremely dry and fragile throughout the year. Texture ranges from sandy to loamy and many bottomland areas are saline. These highly variable soil textures have developed by stream flooding, and wind-caused erosion and depositions. A thin, loamy surface layer covers 60 inches of sand. The soils have extremely rapid permeability and are highly susceptible to wind erosion. Wind erosion in the 1930s and 1950s was high and in the 1970s, severely wind-eroded spots were documented in the area. Exposed sand dunes, or blowouts, occur frequently. Most site access roads consist of unpaved and compacted sandy loam soils which are prone to wind and water erosion.

NPS

Flooded road in Sand Creek Massacre NHS, 2007.

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Discussion

Soils in the Sand Creek Massacre site are extremely sensitive to human traffic and other alterations. Intensive management is required to prevent wind loss of soils. Native grass cover is quickly destroyed by overgrazing, plowing, and trampling which exposes sand below the surface layer to wind erosion. The majority of vegetation inventoried in 2005 showed major effects of disturbance. Researchers evaluated opportunities to restore the floodplain to pre-disturbance conditions, though it is likely that areas primarily disturbed by agriculture and construction have been pushed beyond their ecological thresholds and have a significantly diminished potential.